*भारतीय मानक*
*Indian Standard*

**IS 17583 : 2021**

# स्टेडियोमीटर के लिए विशिष्टि

# Specification for Stadiometer

ICS 17.040.30

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**June 2021** **Price Group 3**

Weights and Measures Sectional Committee, PGD 26

## FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Weights and Measures Sectional Committee, had been approved by the Production and General Engineering Division Council.

This Indian Standard is addressed to manufacturers, suppliers, doctors and importers of the Stadiometers described in the scope.

Guidelines of UNICEF and ICDS on this product has been given due consideration while preparing this standard.

The composition of the Committee responsible for the preparation of this standard is given in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values ( *revised* )’.

## *Indian Standard*

# SPECIFICATION FOR STADIOMETER

## 1 SCOPE

**1.1** This Indian standard specifies the construction, material, metrological and dimensional requirements for the Stadiometer which are Portable board for measuring height of human beings above the age of 24 months.

**1.2** This standard is designed for the Stadiometer used to measure height of the human beings in standing position.

## 2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. The standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of this standard.

| *IS No.* | *Title* |
|---|---|
| 17077 (Part 1) : 2020/<br>ISO 19062-1 : 2015 | Plastics — Acrylonitrile butadiene styrene (ABS) moulding and extrusion materials: Part 1 Designation system and basis for specifications |
| 17050 : 2018/<br>IEC 62262 : 2002 | Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK Code) |
| IS/IEC 60529 : 2001 | Degrees of protection provided by enclosures (IP Code) |
| 9873 (Part 1) : 2019/<br>ISO 8124-1 : 2018 | Safety of toys: Part 1 Safety aspects related to mechanical and physical properties |
| 6455 : 2020 | Specification for single row radial ball bearings |

## 3 TERMS AND DEFINITIONS

### 3.1 Metrological Characteristics

**3.1.1** *Material Measure of Length*

Material measure provided with scale marks, the distances between which are indicated in legal units of length.

**3.1.2** *Nominal Length*

Length by which the measure is designated.

**3.1.3** *Principal Scale Marks*

Two scale marks, the distance between which represents the nominal length of the measure.

**3.1.4** *Scale*

Set of all the scale marks and associated numbering.

**3.1.5** *Scale Interval*

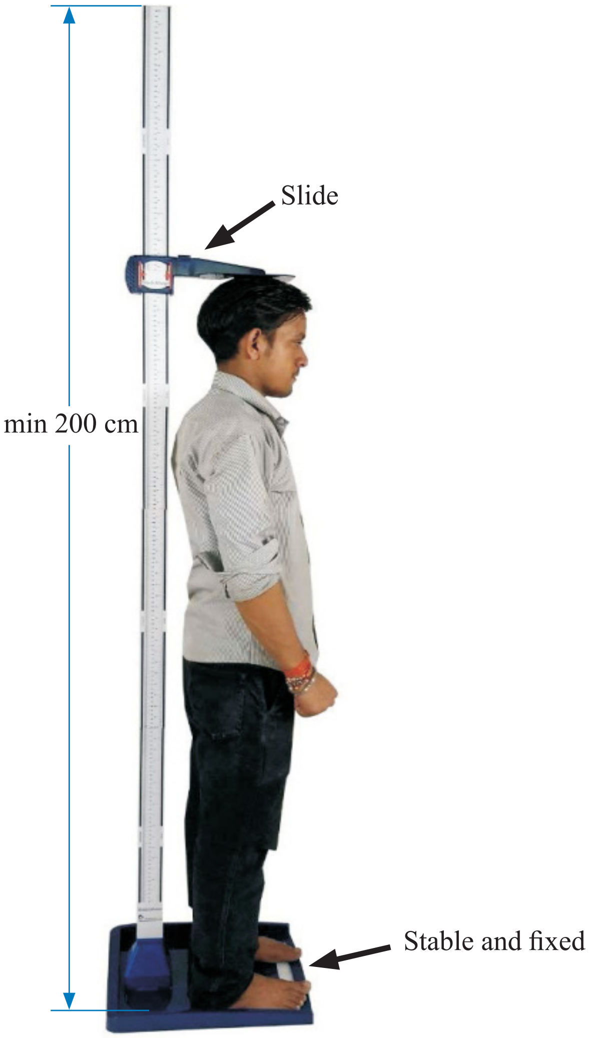
Value expressed in units of length of the difference between the values corresponding to two consecutive scale marks, for analog indication; or the difference between two consecutive indicated values, for digital indication.

## 4 CONSTRUCTION

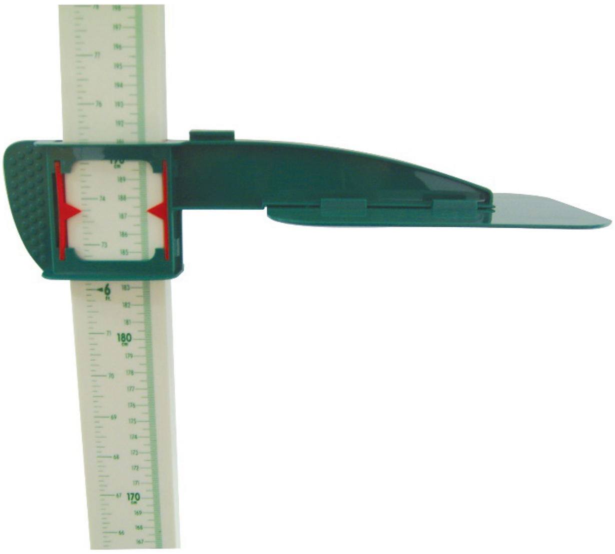
**4.1** The design of the Stadiometer shall be as given below:

a) The board shall be firm, flat surface with atleast 200 cm width;
b) No part shall be loose or shaking during transportation;
c) Simple and fast set up, no tools (screwdriver etc.) required;
d) Weight of Stadiometer shall be min of 2.5 kg, for Stainless steel board, the maximum weight shall not exceed 4 kg. ABS can also be primary material of construction with minimum thickness 3.5 mm and Weight of ABS Stadiometer should be maximum 2.5 kg; and
e) Edges shall not be sharp anywhere on the instrument.

**4.2** The typical design of the Stadiometer is given in Fig. 1. The head piece shall be movable/sliding part smoothly and foot piece shall be fixed as mentioned in the Fig. 1. The head piece shall not fall freely and shall be controlled with a spring which is fixed on the top of the scaling pole.



(a)



(b)

FIG. 1 TYPICAL (A) STADIOMETER (B) HEAD PIECE SHOWING SLIDE AS WELL AS MARKINGS

**4.3** The graduation marks for the measurement shall be on both the sides of the board either embossed/inscribed or any other method which shall inerasable and indelible. The graduation marks shall be visible in low light also.

## 5 BOARD REQUIREMENTS

**5.1** The boards of the stadiometer shall be made of either of the following materials.

a) Acrylonitrile Butadiene Styrene (ABS) plastic confirming to IS 17077 (Part 1) with atleast 6 mm thickness at any point of the meter. that is, Thickness of each side of ABS moulded hollow box should be minimum 3 mm.

b) Wood, any of the below:
   1) Teak (Tctona grandis Linn. F);
   2) Roseweed (Delbergia Latifolia Roxb);
   3) Sheehsam (Dalbergia Sisso Roxb);
   4) Haldu (Adina Cordifolia Hoock. f);
   5) Bijasal (Pterocarpus marsupium Roxb); and
   6) Boxwood (Blaxux Sempervirens).

c) Stainless steel of Grade X02Cr19Ni10 confirming to IS 6529.

**5.2** The slide of the meter shall be equipped with either sheet angle guides or ball bearing type guides so that head piece shall move easily. The guide angles shall be made from mild steel sheet not less than 1.25 mm thick. The ball bearings, if used, shall confirm to IS 6455. Slider may also be made of ABS material with smooth movement on board for long lasting use.

## 6 METROLOGICAL REQUIREMENTS

**6.1** The graduation marks shall be made at every centimetre and numbered. The marks at the centimetre divisions shall be of 2.5 cm long and those at 5 millimeters divisions shall be of 1.5 cm.

**6.2** Scale shall be calibrated which are traceable to the national measurement standards.

**6.3** Scales shall be marked with a cross mark at every 25 cm of the measure.

## 7 MARKINGS

The graduations on the scale/instrument shall be marked as below:

a) Long lasting, easy to read in low light conditions;
b) Double sided graduation for easy measurements;
c) Orientation of numerals on the measurement scale: parallel to the board;
d) Facilitating quick and easy reading of results;
e) Smallest graduation: 0.1 cm;
f) Precision: (+) or (–) 0.2 cm;
g) Measurement range: Should be able to measure upto 200 cm at least; and
h) Accuracy; (+) or (–) 0.2 cm.

## 8 MECHANICAL TESTS

### 8.1 Sharp Edge Test

There shall be No sharp edges or corners throughout the instrument. The edges of the board shall confirm to IS 9873 (Part 1) in view of the safety to the infant.

### 8.2 Design Test for Heavy Duty Use

The instrument shall be designed and manufactured in such a way that it shall be used in every demanding circumstances confirming to IS 17050. It shall be durable, resistant to effects of excessive humidity and high temperature, water resistant and shock resistant confirming to IS/IEC 60529.

## 9 CALIBRATION OF THE INSTRUMENT

The instrument shall be calibrated once in a year either from National Physical Laboratory, Regional Laboratories of Weights and Measures (Legal Metrology) Department and any other authorized agency for the calibration.

## 10 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

# ANNEX A

( *Informative* )

## GUIDE TO ACCURATELY MEASURING THE LENGTH OF A CHILD/ADULT

**A-1** The following steps are to be followed for proper measuring the height/length of a human being more than 24 cm height.

**Step Action:**

a) Ask the participant to remove their:
    1) Footwear (shoes, slippers, sandals etc); and
    2) Head gear (hat, cap, hair bows, comb, ribbons, etc).

NOTE — If it would be insensitive to seek removal of a scarf or veil, the measurement may be taken over light fabric.

b) Ask the participant to stand on the board facing you.
c) Ask the participant to stand with: 1) Feet together; 2) Heels against the back board; and c) Knees straight.
d) Ask the participant to look straight ahead and not look up.
e) Make sure eyes are the same level as the ears.
f) Move the measure arm gently down onto the head of the participant and ask the participant to breathe in and stand tall.
g) Read the height in centimetres at the exact point.
h) Ask the participant to step away from the measuring board.
j) Record the height measurement in centimetres in the participant’s Instrument.

# ANNEX B

( *Foreword* )

## COMMITTEE COMPOSITION

Weights and Measures Sectional Committee, PGD 26

| *Organization* | *Representative(s)* |
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## Amendments Issued Since Publication

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